

# FRIEDMAN & BRUYA, INC.

## ENVIRONMENTAL CHEMISTS

### Analysis For Total Metals By EPA Method 200.8

|                 |             |             |  |
|-----------------|-------------|-------------|--|
| Client ID:      | M-04489     | Client:     | Alaskan Copper Works                   |
| Date Received:  | 08/13/09    | Project:    | 3405 Zinc Test, PO M04489, F&BI 908088 |
| Date Extracted: | 08/13/09    | Lab ID:     | 908088-01 1g                           |
| Date Analyzed:  | 08/14/09    | Data File:  | 908088-01 1g.027                       |
| Matrix:         | Solid       | Instrument: | ICPMS1                                 |
| Units:          | mg/kg (ppm) | Operator:   | AP                                     |

|                    |             |              |              |
|--------------------|-------------|--------------|--------------|
| Internal Standard: | % Recovery: | Lower Limit: | Upper Limit: |
| Germanium          | 101         | 60           | 125          |

|          |                              |
|----------|------------------------------|
| Analyte: | Concentration<br>mg/kg (ppm) |
| Copper   | 272                          |
| Zinc     | 72,000 ve                    |

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## ENVIRONMENTAL CHEMISTS

### Analysis For Total Metals By EPA Method 200.8

|                 |                |             |  |
|-----------------|----------------|-------------|--|
| Client ID:      | Method Blank   | Client:     | Alaskan Copper Works                   |
| Date Received:  | Not Applicable | Project:    | 3405 Zinc Test, PO M04489, F&BI 908088 |
| Date Extracted: | 08/13/09       | Lab ID:     | I9-338 mb                              |
| Date Analyzed:  | 08/14/09       | Data File:  | I9-338 mb.017                          |
| Matrix:         | Solid          | Instrument: | ICPMS1                                 |
| Units:          | mg/kg (ppm)    | Operator:   | AP                                     |

|                    |             |        |        |
|--------------------|-------------|--------|--------|
| Internal Standard: | % Recovery: | Lower  | Upper  |
| Germanium          | 94          | Limit: | Limit: |
|                    |             | 60     | 125    |

|          |               |
|----------|---------------|
| Analyte: | Concentration |
|          | mg/kg (ppm)   |
| Copper   | <1            |
| Zinc     | <1            |

**FRIEDMAN & BRUYA, INC.**

**ENVIRONMENTAL CHEMISTS**

Date of Report: 08/18/09

Date Received: 08/13/09

Project: 3405 Zinc Test, PO M04489, F&BI 908088

**QUALITY ASSURANCE RESULTS  
FOR THE ANALYSIS OF SOLID SAMPLES  
FOR TOTAL METALS USING EPA METHOD 200.8**

Laboratory Code: 908058-05 (Duplicate)

| Analyte | Reporting Units | Sample Result | Duplicate Result | Relative Percent Difference | Acceptance Criteria |
|---------|-----------------|---------------|------------------|-----------------------------|---------------------|
| Copper  | mg/kg (ppm)     | 11.7          | 11.6             | 1                           | 0-20                |
| Zinc    | mg/kg (ppm)     | 61.5          | 63.3             | 3                           | 0-20                |

Laboratory Code: 908058-05 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result | Percent Recovery MS | Acceptance Criteria |
|---------|-----------------|-------------|---------------|---------------------|---------------------|
| Copper  | mg/kg (ppm)     | 50          | 11.7          | 136 b               | 50-150              |
| Zinc    | mg/kg (ppm)     | 50          | 61.5          | 96 b                | 50-150              |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---------|-----------------|-------------|----------------------|---------------------|
| Copper  | mg/kg (ppm)     | 50          | 106                  | 70-130              |
| Zinc    | mg/kg (ppm)     | 50          | 104                  | 70-130              |

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### **Data Qualifiers & Definitions**

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

. A1 - More than one compound of similar molecule structure was identified with equal probability.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for this range fell outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte indicated may be due to carryover from previous sample injections.

d - The sample was diluted. Detection limits may be raised due to dilution.

ds - The sample was diluted. Detection limits are raised due to dilution and surrogate recoveries may not be meaningful.

dv - Insufficient sample was available to achieve normal reporting limits and limits are raised accordingly.

fb - The analyte indicated was found in the method blank. The result should be considered an estimate.

fc - The compound is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. The variability is attributed to sample inhomogeneity.

ht - The sample was extracted outside of holding time. Results should be considered estimates.

ip - Recovery fell outside of normal control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.

j - The result is below normal reporting limits. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The analyte result in the laboratory control sample is out of control limits. The reported concentration should be considered an estimate.

jr - The rpd result in laboratory control sample associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the compound indicated is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received in a container not approved by the method. The value reported should be considered an estimate.

pr - The sample was received with incorrect preservation. The value reported should be considered an estimate.

ve - The value reported exceeded the calibration range established for the analyte. The reported concentration should be considered an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The pattern of peaks present is not indicative of diesel.

y - The pattern of peaks present is not indicative of motor oil.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.  
Charlene Morrow, M.S.  
Yelena Aravkina, M.S.  
Bradley T. Benson, B.S.  
Kurt Johnson, B.S.

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Seattle, WA 98119-2029  
TEL: (206) 285-8282  
FAX: (206) 283-5044  
e-mail: fbi@isomedia.com

August 18, 2009

 DUPLICATE

INVOICE #09ACU0818-2

Accounts Payable  
Alaskan Copper Works  
628 South Hanford  
Seattle, WA 98134

RE: Project 3405 Zinc Test, PO M04489, F&BI 908088 - Results of testing requested  
by Gerry Thompson for material submitted on August 13, 2009.

|   |              |
|---|--------------|
| 1 sample analyzed for Zinc and Copper<br>by Method 200.8 @ \$47.50 per sample | \$ 47.50     |
| Rush Charges (24 hr) 100% of \$47.50  | <u>47.50</u> |
| Amount Due .....  | \$ 95.00     |

FEDERAL TAX ID # (b) (6)

908088

## SAMPLE CHAIN OF CUSTODY

ME 8/13/09 AI 1

Send Report To General ThompsonCompany Alaskan Copper WorksAddress 628 S. Harbor StCity, State, ZIP Seattle WA 98134Phone # 206-571-6033 Fax # 206-382-4309

SAMPLER (signature)

PROJECT NAME/NO.

3405 Zinc Test

PO #

M04489

REMARKS

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## TURNAROUND TIME

☐ Standard (2 Weeks)☒ RUSH 24 hrs

Rush charges authorized by:

## SAMPLE DISPOSAL

☐ Dispose after 30 days☐ Return samples☐ Will call with instructions

| Sample ID | Lab ID | Date    | Time  | Sample Type    | # of<br>containers | ANALYSES REQUESTED |              |               |              |               |     |              |           |    |    | Notes |  |
|-----------|--------|---------|-------|----------------|--------------------|--------------------|--------------|---------------|--------------|---------------|-----|--------------|-----------|----|----|-------|--|
|           |        |         |       |                |                    | TPH-Diesel         | TPH-Gasoline | BTEX by 8021B | VOCs by 8260 | SVOCs by 8270 | HFS | X Z inc + Cu | add Cu p- | GT | MS |       |  |
| M-04285   | 01     | 8/13/09 | 11:30 | Paint<br>Chips | 1                  |                    |              |               |              |               |     |              |           |    |    |       |  |
|           |        |         |       |                |                    |                    |              |               |              |               |     |              |           |    |    |       |  |
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|           |        |         |       |                |                    |                    |              |               |              |               |     |              |           |    |    |       |  |

Friedman & Bruya, Inc.  
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Seattle, WA 98119-2029

Ph. (206) 285-8282

Fax (206) 283-5044

FORMSCOC\COC.DOC

| SIGNATURE                           | PRINT NAME              | COMPANY    | DATE           | TIME           |
|-------------------------------------|-------------------------|------------|----------------|----------------|
| Relinquished by: <u>[Signature]</u> | <u>General Thompson</u> | <u>ACW</u> | <u>8/13/09</u> | <u>1:45 PM</u> |
| Received by: <u>[Signature]</u>     | <u>HONG NGUYEN</u>      | <u>EMI</u> | <u>✓</u>       | <u>✓</u>       |
| Relinquished by:                    |                         |            |                |                |
| Received by:                        |                         |            |                |                |

Samples received at 22 °C

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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FAX: (206) 283-5044  
e-mail: fbi@isomedia.com

August 18, 2009

Gerry Thompson, Project Manager  
Alaskan Copper Works  
628 South Hanford  
Seattle, WA 98134

Dear Mr. Thompson:

Included are the results from the testing of material submitted on August 13, 2009 from the 3405 Zinc Test, PO M04489, F&BI 908088 project. There are 4 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl  
Project Manager

Enclosures  
ACU0818R.DOC